

Series 70 Portable Computers



Hewlett-Packard Series 70 Portable Computers

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The HP-75 Portable Computer— You Can Take It Anywhere

The HP-75 is the portable computer for professionals on the move. As powerful as a personal computer, as small as a book, the HP-75 gives you the answers you need wherever and whenever you need them.

Enjoy Fast and Easy Solutions.

Prepare a 30-day income projection on the 7 a.m. to Chicago? Type a letter-perfect trip report on the 608 home? That's right. With an HP-75 and our ready-to-go software, you can perform spreadsheet analysis and create text on a plane or in a hotel room, at home, or in the office. To evaluate alternative courses of action, to ask "what if?" questions, and to

get your answers almost instantaneously, simply plug in an HP-75 VisiCalc® module. To write memos, letters, reports, and other short documents quickly and easily, choose Text Formative software. You can generate hard-copy output of your formatted text or program an HP graphics plotter to create high-quality color slides,

To get up-to-date information for your applications, you can use our acoustic coupler. Working with Data Communications software, the coupler lets the HP-75 communicate with other computers over telephone lines. Dial up stock market data and educational and message services

such as THE SOURCE™, the Dow Jones News/Retirement Service®, and Computerize. Tap your office or lab computer from the field. If electronic figures in your future, our coupler or an HP-IL385-232C interface with any standard modem, may be the right solution.

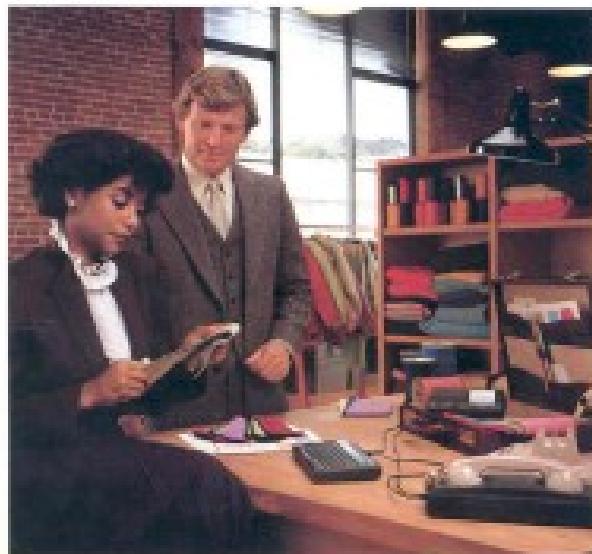
If you frequently work away from your desk, you'll appreciate the HP-75's file structure. It lets you store multiple VisiCalc worksheets and other files simultaneously. You can load program, data, and appointment files at the office, then call them up once you're out in the field.

You'll also like the way the HP-75's typewriter-like keyboard lets you touch-type to enter data fast, even with it resting on your lap. And the way you can redefine almost every key to become another character, expression, command, or to execute a program.

Make Every Minute Count.

You can rely on the HP-75's appointment and time modes to keep you on schedule. When each of your appointments comes due, the computer turns itself on, emits one of nine alarms, and displays the reminder message you entered. You don't have to worry about turning the computer off. The HP-75 automatically puts itself into deep sleep when the job's done. And you don't have to worry about losing your programs or data. Continuous Memory saves your information even when the HP-75 is turned off.

VisiCalc® is a registered trademark of VisiCorp.
THE SOURCE™ is a service mark of Dow Jones & Company, Inc., a division of Dow Jones & Sons, Inc.
Data Communications Service® is a registered trademark of Dow Jones & Company, Inc.



Set Yourself Free.

With the HP-75, you can leave the office and still have immediate access to personal computer power. There are 16K bytes of user memory (RAM) built-in, and you can expand it to 24K bytes with an optional 8K-byte plug-in module. With 24K bytes of RAM and a 64K byte built-in ROM operating system, you have plenty of memory for problem solving. You also have the option of using as many as three plug-in ROM modules with up to 32K bytes each. The HP-75 uses convenient battery power. Three rechargeable nickel-cadmium batteries run for two to three weeks of normal use or 20 to 30 hours of continuous use.

You can even carry around your own personal computing system in a briefcase. Or, you can create a desktop system for the office or lab. You get this flexibility because the HP-75's built-in HP-IL (Hewlett-Packard Interface Loop) lets you access a variety of portable, battery-powered devices for mass storage, printing, plotting, and measurement.

In the Laboratory.

Whether you're crunching numbers, creating sophisticated programs, or performing real-time debugging, the HP-75 backs you up with the power, accuracy, and versatility you need.

Solve It With Software.

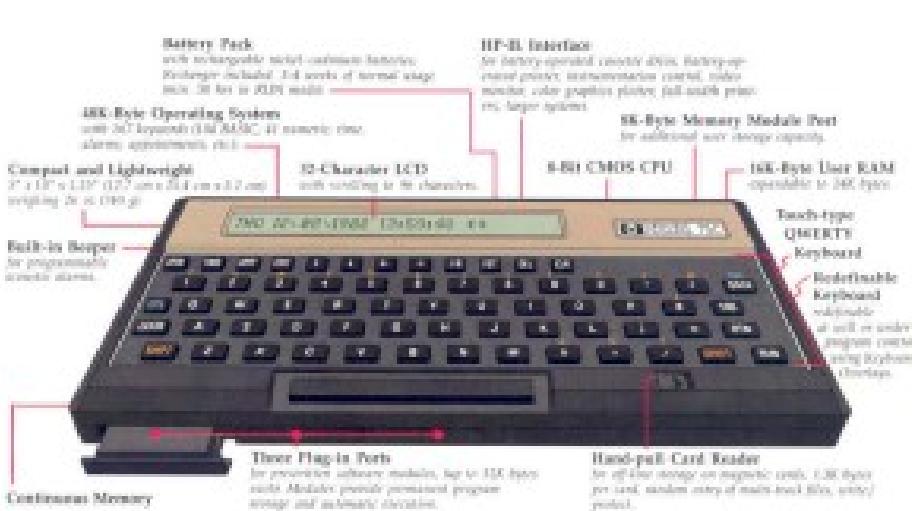
You've got two software media to choose from. You can take advantage of ready-encoded software solutions with plug-in modules, such as HP-75 Application Pacs (VisiCalc, Test Performer, Math, Surveying, and Data Communications). Or you can load ready-written solutions from magnetic cards in disciplines such as math, engineering, and finance from HP-75 Solutions Books.

Take Control.

With built-in HP-IL, the HP-75 can talk to and work with devices such as battery-powered mass-storage drives and printers. It can control instruments such as digital multimeters and data acquisition and control devices. And using a variety of interface converters, it can communicate with desktops such as HP Series 80, 100, and 200 computers and large mainframes such as the HP 1000 and the HP 3000.



Hewlett-Packard HP-75 Key Features



Hewlett-Packard

HP-75 Hardware Overview

HP-75 Computer System Components

For Putting it Down on Paper:



HP 82102A HP-75 Thermal
Printer/Plotter 11



HP 82903B Impact Printer 12



HP 2671A/G Alphanumeric/
Graphic Printers 13

For Reading and Storing Data:



HP 82101A Digital Cassette Drive 10



HP 3466A Digital Multimeter ... 16



HP 3421A Data Acquisition/
Control Unit 16

For Drawing Your Own Conclusions:



HP 7470A Graphics Plotter 14

For Building HP-IL Into Your Product:



HP 82166C HP-IL Interface Kit 17

For Enhancing Your Performance:



HP 82300A 8K Byte Memory Module 19

For Communicating With Other Computers, Peripherals, and Instruments:



HP 82168A Acoustic Coupler 15



HP 82165 32-Column Video Interface 17



HP 82166A RS-232C Interface
HP 82167A CPI/C Interface
HP 82169A HP-IL Interface
HP 82308A Series 80 Personal Computer Interface 17

Hewlett-Packard

HP-75 Software Overview

Clinch That Sale.

When making that important presentation to your client, you want the tools that will help you make the sale quickly and efficiently. You also need access to information critical to the buying decision. This professional depends on the HP-75 when selling life insurance. The relevant information, contained on preloaded cassette, can be accessed speedily through the cassette drive. His HP-75 quickly ploughs through complex formulas to give his clients the correct answer. And with the HP-75's VisiCalc software the rep can calculate the options that are best for them. He also brought along an HP-75 video interface so that the information could be displayed, right on their own TV screen. The rep can even provide them with a printout of all the options. So, no matter where your job takes you, let the HP-75 help make you an instant success.

For General Business:

Application Pacs	18
• VisiCalc	18
• Test Formatter	20
• Data Communications	20
• Math	22

Solutions Books	28
• Graphics	
• Math I	
• Math II	
• Math III	
• Finance	
• Real Estate	
• Statistics	
• Mass Media Duplication/Privacy	
• I/O Utilities	

For Entertainment:

Solutions Books	28
• Games I	
• Games II	



For Engineering:

Application Pacs	18
• VisiCalc	18
• Test Formatter	20
• Data Communications	20
• Surveying	24
• Math	22

Solutions Books	28
• Electronics	
• Math I	
• Math II	
• Math III	
• Statistics	
• Test Statistics	
• Graphics	
• Mass Media Duplication/Privacy	
• I/O Utilities	

For Science:

Application Pacs	18
• VisiCalc	18
• Math	22
• Test Formatter	20
• Data Communications	20

Solutions Books	28
• Math I	
• Math II	
• Math III	
• Statistics	
• Test Statistics	
• Graphics	
• Mass Media Duplication/Privacy	
• I/O Utilities	

Hewlett-Packard HP-75 Hardware

HP-75 Portable Computer

The HP-75 is a battery-powered portable computer that matches the information handling capability and accuracy of larger desktop computers. It weighs only 2.6 ounces and measures 10 by 2 by 1.25 inches. This fully-integrated computer may be used alone or configured as part of an HP-II (Hewlett-Packard Interface Language) briefcase system or an HP-II desktop system.

- The HP-75 contains a CMOS version of a Series 80 Personal Computer CPU for speed and accuracy.
- The built-in 48K-byte ROM BASIC Operating System has more than 100 system and BASIC commands and 41 numeric functions to choose from.
- With the HP-75's multiple file structure, any number of files, up to available memory space, may be in memory at the same time. You can keep text and BASIC files.
- A built-in appointment function provides personal scheduling, auto alarm, and message options. A clock/calculator function lets you create or use date/calendar-dependent programs. Programs or commands may be executed unattended.
- The HP-75 offers a maximum of 32K bytes of RAM, with 38K bytes built in and an optional 88K-byte memory module. Three ports hold up to 56K bytes of applications ROM modules.
- Continuous Memory saves data and programs even when the HP-75 is turned off.

Features

- 8.0ns CMOS Series 80 Personal Computer CPU.
- Built-in 48K-Byte ROM BASIC Language operating system.
- 38K-Byte RAM plus optional 88K-Byte RAM pluggin.
- 3 software module plug-on ports hold up to 56K bytes each.
- Touch-type QWERTY keyboard.
- Battery power.
- Built-in HP-LInterface.
- Built-in liquid-crystal display.
- Multiple file support.

Benefits

- Fast and efficient data processing.
- Powerful programming; fast math calculations. Run efficient line management; more than 90 percent of RAM free for your applications.
- Plenty of memory.
- Customized problem solving. Up to 32K of software ROM.
- Easy, fast, and accurate data entry.
- Use it anywhere.
- Printing and mass storage anywhere; remote communications via telephone lines; liquid-crystal display capability.
- Convenient and inexpensive off-line storage of data and programs.
- Instant access to most commonly used programs.

- The HP-75 has a touch-type keyboard that lets you enter data fast. And you can redefine more than 180 keys or key combinations.
- Simple keystrokes call up a "hidden" numeric keypad for quick input of numeric data.
- Built-in HP-L lets your HP-75 communicate with HP computers, peripherals, and instruments in a variety of ways to suit specific needs.
- A built-in card reader lets you store data and information inexpensively on small magnetic cards, up to 1.3K bytes per card.
- The liquid-crystal display acts as a 12-character window on a 96-character line. You view the entire

line by scrolling. The 286-character set includes both upper and lowercase ASCII characters with true descenders, as well as several special characters.

- Three rechargeable nickel-cadmium batteries permit two to three weeks of normal use between charges or 20 to 30 hours of continuous operation.

DATA LINES—Displays information according to DMAGE statement.
DATA—Data entry program.
DMU—Definition of multiple user-defined variables.
FOR—*i*, *j*, *k*—Defines beginning of FOR-NEXT loop.
GOTO—Branches to series of statements.
LIMIT—Unconditionally branches to a line number.
IF—TRUE, FALSE—Tests condition and branches.
INPUT—Specifies the input format for INPUT USRNC and PRINT USRNC.
INPUT—Allows input of data from the keyboard.
PARAMS—Dimensions and reserves memory for integer precision matrices variables.
LET—Assigns value to user-new variables.
LET *Pi*=*V*—Assigns a value to a function.
NEXT—Defines end of FOR-NEXT loop.
ON ERROR—Enables user-defined error trapping.
ON TIMER #—Creates a program timer.
ON ERROR #—Creates user-defined error trapping.
ON TIMER #—Sets a program timer.
ON COTTO—Compiled COTTO.
ON COTTO—Compiled COTTO.
OPTION BASE—Defines lower bound of all arrays in a program.
POP—Replaces pending subroutine returns.
PRINT—Prints information.
PRINT #—Writes data stored in a data file.
PRINT USRNC—Prints information according to DMAGE statement.
PUT—Registers pending of corresponding key or keyboard combination.
RANDOMIZE—Computes new random number seed.
READ—Reads values from DMAGE statement to variables.
READ #—Reads data items from a disk file.
READ—Dimensions and reserves memory for real variables.
READ—Program remarks.
READ DATA—Writes data pointer to a DATA statement.
RESTORE #—Restores data pointer to line of data file.
REUBIN—Causes program to branch to subroutine or statement following the branching statement that referenced the subroutine.
RESORT—Dimensions and reserves memory for other previous numeric variables.
STOP—Holds program.
WAIT—Interrupts program execution for a specified period of time.

SYSTEM COMMANDS
ALARM OFF—Allows user appointments.
ALARM ON—Reserves current handling of user appointments.
APPLY TO—Assigns device codes to programs.
ATTEN—Regulates automatic line numbering.
BUS OFF—Disables bypass.
BUS ON—Enables bypass operation.
BYE—Logs computer off.
CAT—Displays catalog entry of the specified file.
CAT ALL—Accesses complete system catalog.
CAT CARD—Displays catalog information recorded on card back.
CLEAR IOK—Resets all I/OAL devices to their initial states.
CLEAR VAR\$—Clears values of variables.
CONT—Continues program execution.
COPY—Copies specified file in memory to specified destination.
DIMULT OFF—Causes use of default values for improper mathematical expressions.
DIMULT ON—Restores use of default values for improper mathematical expressions.
DEP KEY—Readplies key or keystroke combinations.
DISPLAY—Specifies length of time computer will wait between display lines.
DELETE—Deletes specified lines.
DISPLAY D—Designates specified device as a review display device.
EDIT—Moves the pointer to specified file.
ENDFILE—Resets the end-of-line.
FETCH—Fetches specified line.
FETCH KEY—Resets current definition of specified key or keystroke combination.
INITIAL LOG—Prepares medium or mass storage device to store information.
LINE—Creates or erases line of specified file on display.
LINK ID—Links device codes of assigned I/OAL devices on the display.
LINK—Links computer together without specified password.
MAPCUE—Sets margins.
MERGE—Merges several files specified file into current file.
NAME—Reserves current file and creates another variable.
OFF IC—Suspends I/OAL communication.
OPTION ANGLE DEGREES—Sets trigonometric mode to degrees.
OPTION ANGLE RADIAN—Sets trigonometric mode to radians.
PAPER—Prints medium on specified mass storage device.
PLT—Lists lines of specified file on current system printer.

PRINTER N—Designates specified device as a printer device.
PROTECT—Protects magnetic card from being overwritten.
RELEASE—Resets file from memory.
PRINTN—Sets line length for PRINT and PLIST instructions.
RENAME—Takes name of specified file as directory.
RENUMBER—Resumes specified portion of file.
RESTORE IC—Restores HP-21 communications.
RUN—Begins program execution.
STANDBY OFF—Logs computer off after five minutes of inactivity.
STANDBY ON—Sets the computer to stay-on automatically.
TRACEFLOW—Sets the computer to display source and destination line numbers of source to program execution.
TRAIL VAR\$—Sets the computer to display line numbers and variable names.
TRANSFORM—Transforms one type of file to memory into another.
UNSTRUCT—Resumes in the protection from diagnostic card.
WIDTH—Sets line length for COPY and LIST instructions.
ARITHMETIC OPERATORS
 $+,-,*,/,^,!,\%,$
LOGICAL OPERATORS
AND, OR, FOR, NOT
RELATIONAL OPERATORS
 $<, >, =, \neq, \leq, \geq, \approx, \approx,$
HP RETRA 16-KBYTE MEMORY MODULE
 This module gives you an additional 16 Kbytes of programmable memory. Insert plug into the HP-21 to give you a maximum of 248 bytes of RAM.
HP-21 ACCESSORIES
 Owner's Manual 1607-90003
 Reference Manual 16079-90004
 Rechargeable Battery Pack 16079A
 Reserve Power Pack 16079AL
 Recharger for Reserve Power Pack (110 volt) 16079A
 AC Adapter/Recharger 16079B
 Security Cylinder 16079A
 Field Case 16079A
 30 Blank Magnetic Card Pkg 16079A
 100 Blank Magnetic Card Pkg 16079A
 Overlay Kit Quarterly 16077BA
 Notebook Case Holder (optional) 16077DA
 Blank Overlay Kit (optional) 16077TA
 *Requires an HP4000A Recharger (110 volt).

Hewlett-Packard Peripherals

HP 82161A

Digital Cassette Drive

The HP 82161A battery-powered digital cassette drive provides convenient data-handling capability for Series 70 and Series 40 computers. With 128K bytes of on-line mass storage packed into each microcassette, you have the power for applications which previously required a larger computer. And you can access files quickly, thanks to variable record length, file-by-name organization, tape directory, and a tape directory.

All tape movement is under microprocessor control, so you don't waste time. Average rewind time is under 20 seconds; read/write operations are executed at nine inches per second, and search speed is 30 inches per

Features

- Battery power
- 128K bytes per cassette
- Variable record length, file-by-name organization, tape directory
- External buffer space
- STANDBY mode

Benefits

- Take it anywhere
- More than twice the RAM capacity of the HP-75, more than 30 times the RAM capacity of the HP-41C
- Access data quickly and easily, save file space
- Minimizes tape motion and access time
- HP-E, controller can run drives on or off from a remote location, conserving battery power

second. You get buffer space for temporary storage of directory information, making access even faster.

The HP 82161A can locate your files under program control. It features battery-saving STANDBY mode

that lets a Series 40 controller turn the drive on or off from remote locations. Programming is required for Series 70 to perform this function. See the HP-75 I/O Utilities Solutions Book, 90079-12013.

Physical Specifications

DIMENSIONS 17.8 cm (7.0 in) x 12.3 cm (4.8 in) x 1.1 cm (0.4 in)

WEIGHT 200 g (1.8 lbs)

POWER REQUIREMENTS

Batteries dry-cell, 4.2 V 6 volt, quick-charge nickel-cadmium battery pack

Fast recharging time 14 to 18 hours (Driver turned on or off)

Usage DPA-1 write protection feature off, DS-3.5 write protection feature on, STANDBY level -2.5 volts maximum (feature off), STANDBY level -0.6 volts maximum (feature on/off), DS-3.5V (0.1A) 0.5A maximum current rating.

DATA FORMAT

Number of tracks 2
Density 320 bytes per sector (80 bytes/sector)

Format 256 bytes per record (8 bytes per byte)

Formatted capacity 512 records (32K/sector bytes)

Encoding method 16-phase/lead phase encoding

DRIVE MECHANISM

Type two-motor, back-driven
Read/write speed 23 revolutions (9 in) per sec

Search/Rewind speed 300mm/sec (30 in) per sec

INTERFACE(S)

Type HP-E (Hewlett-Packard Interface Loop)

Default address on power up undefined

Default address after auto address unconfigured 2

OPERATING REQUIREMENTS

Operating temperature 10° to 40°C (50° to 104°F)

Charging temperature 10° to 40°C (50° to 104°F)

Storage temperature -40° to 70°C (-40° to 158°F)

DIGITAL CASSETTE

Type Hewlett-Packard Mass Data Cassette (HP 82161A)

Size 2 in x 6 in

Temperature 10° to 40°C (50° to 104°F)

Humidity range storage 20% to 80% relative humidity

Humidity use 20% to 80% relative humidity

SPECIAL MODES

Standby

HIP 82162A

Thermal Printer/Plotter

The HP 82162A provides fast printouts with 24-character lines. It's battery-powered, so you can produce hard copy in the field.

This HP-IL compatible printer/plotter automatically centers and justifies text to the left or right. It has numeric types and lowercase alpha, double-wide characters, and intensity control for optimum contrast and readability. Additionally, it supports STANDALY mode that lets a Series 40 controller manage its power consumption.

Programming is required for Series 70 to perform this function. See the HP-70 I/O Utilities Solutions Book, 08079-12013.

Features

- Battery power
- Automatic centering and left or right justification
- 24-character print lines
- Both single- and double-wide characters
- LED character set
- STANDALY mode

Benefits

- Solaris interface
- Provides field printing control, saves time
- Makes smaller print possible
- Allows highlighting of output
- Allows more precise communication
- HP-IL compatibility lets printer be off from remote location, conserves battery power

Physical Specifications

DIMENSIONS	10.8 cm (7.8 in) x 11.7 cm (4.2 in) x 6.1 cm (2.4 in)
WEIGHT	985 g (1.0 lb) (includes paper and battery)
CABLE LENGTH	1 m (3 ft)
POWER REQUIREMENTS	Battery: internal, 4.4 Ah NiCd, quick-charge, nickel-cadmium battery pack Battery current, (normal usage) 250 mA (idle), 7 A (printing) Charging time: 24 to 36 hours (printers without car or cells) Operating time: 3 to 5 hours
CHARACTER SETS	Standard ASCII 127 extended expanded ASCII

SPECIAL MODES

Normal, Page, Bar code, Columns, Double wide, Single wide, Graphics, 8-bit escape	STANDALY
24 standard characters, 12 double-wide characters, 108 dot columns per line	SPACES
Upper and lowercase letters	UPPERCASE
Special character generation	CHARACTER
Plotting capabilities	GRAPHICS
101 character buffer	MEMORY

PRINTERS

HP-IL	24 characters/line
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OPERATING REQUIREMENTS

Operating temperature	-10 to 45°C (14° to 113°F)
Charging temperature	15° to 40°C (59° to 104°F)

Storage

Temperature	-40 to 55°C (-40° to 131°F)
Humidity	10% to 90% (non condensing at 40°C)

TERMAL PAPER

Pitch	0.7 cm (2.1 in)
Roll length	25 m (80 ft)
Colors	One, black
Rolls/box	6

INTERFACE

Type	HP-IL, Hewlett-Packard Interface 8
Starting conditions	normal operating or active listener, selected address
Default address	unselected (initial state) or 1 for free-listener startup

HP 8290SB

Impact Printer

Operating bidirectionally at 80 characters per second, this 80-column full-page printer produces forms quickly and legibly.

It has a standard 128-character set with upper- and lowercase letters, and true diacritics. And you can choose from five print modes.

The test mode of this dot-matrix printer has a logic-seeking feature that finds the shortest route. Programmable line spacings, in increments of 1/8 inch, let you print superscripts and subscripts. A Roman character set allows multilingual printing.

The HP 8290SB prints single or multipart forms (up to three parts, each with a maximum thickness of 0.3 mm). Its adjustable tractor feed can be used with all types of computer forms with widths between 4 in (102 mm) and 20 in (508 mm). Programmable page length lets you define page size and skip perforations.

Features

- Up to 80 characters per line
- Operates bidirectionally at 80 characters per second
- Programmable page length for single or multipart forms
- Adjustable tractor feed
- Roman character set

Benefits

- Full-page prints available
- Prints forms quickly
- Greater carriage output
- Use with all types of computer forms
- Allows printing in several languages

Physical Specifications

DIMENSIONS 21.3 cm (14.2 in)
W: 4 cm (14.7 in)
H: 3 cm (12.0 in)

WEIGHT 3.5 kg (12 lbs)

POWER REQUIREMENTS
Power source AC 100-120 VAC
(50/60 Hz)

100-120 VAC, 200-240 VAC
(50/60 Hz)

100-120 VAC, 200-240 VAC
(50/60 Hz)

FREQUENCY 50/60 Hz
Power consumption 100VA maximum

OPERATING REQUIREMENTS

Operating temperature 5° to 35°C (41° to 95°F)

Humidity 20% to 80% noncondensing

PRINT FORMAT

Technique dot matrix impact
Speed 80 characters per second bidirectional logic-seeking at 80 cps

Test mode characters
and structures 9 x 9 characters

Graphics mode characters
structures 12 x 16 or 12 x 12 characters

Character per line 40, 80, 90, 120

Line feed rate 5 lines/sec

Print Pitch (0.075)	Line Length Characters	
0.075	normal	40
0.075	normal expanded	80
0.075	compressed	120
0.125	expanded	160
0.125	normal compressed	320

Character Set 96 ROMAC II

Barcode Extension 40

FORMS HANDLING

Form feed
Programmable page length
Automatic perforation stop
Variable vertical line spacing 1/8 in standard;
programmable in various line densities

FORMS SPECIFICATIONS

Paper width range 10.2 cm (4 in) to 50.8 cm (20 in)

Paper thickness maximum 0.3 mm (0.01 in)

Multipart forms original plus 2 copies

PRINT BUFFER

One line, up to 110 characters

HP 2671A/G Alphanumeric/Graphics Thermal Printers

The HP 2671A Alphanumeric Printer is both quiet and fast — 120 characters per second with a smart, bidirectional print path. The 9 x 12-dot matrix provides excellent character definition. Highlight with an underlining feature, print standard English or use Roman Extension for multilingual text.

In addition to all this, the HP 2671G offers high-resolution graphics capabilities for charts, tables, illustrations, and graphs.

Features

- High throughput
- Quiet
- 9 x 12-dot matrix
- Choice of paper available
- Choice of print media

Benefits

- Rapid printing
- Quietly in quiet areas
- Excellent character definition
- Use fan-fold form or roll paper
- Multilingual output

Physical Specifications

DIMENSIONS	103 cm (40.5 in) x 12.8 cm (5 in) x 42.4 cm (16.7 in)
WEIGHT	6.9 kg (15 lbs)

POWER REQUIREMENTS	
Line voltage	+5%, -10%
115 VAC (50/60 Hz)	
117 VAC (50 Hz)	
120-220 VAC (60 Hz)	
100, 120, 200 and 240 VAC, switch selectable	
Frequency	47.5-60 Hz

FUSER	15 seconds maximum non-printing 30 seconds maximum printing
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OPERATING REQUIREMENTS

Operating temperature	-2° to 50°C (31° to 122°F)
Humidity	10% to 90% noncondensing

PRINT FORMAT

Characters per inch	10 dot matrix thermal
Speed	120 characters/second bidirectional, high-speed in text mode

Character structure	9 x 12-dot matrix
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Print Pitch	Line Length characters
10.26	100
12.00	80

Character Sets	128 LSCII Line drawing Roman Extended international characters, 8-bit mode
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FORMS HANDLING

Front feed loading
Margin control

FORMS SPECIFICATIONS

Formal paper	width: 21.6 cm (8.5 in) Paper options include fan-fold, page perforated
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OTHER PRINTING FEATURES

Underlining, character enhancement

OTHER

2076 raster graphics, Type I bidirectional raster graphics, copy, bidirectional horizontal and vertical resolution: 200 dots per inch x 100 lines

HP 7470A Graphics Plotter

The HP 7470A Graphics Plotter uses a two-pen system to produce high-quality color charts and graphs that fit in your briefcase and go with you anywhere. It works with paper or overhead transparency film for your professional presentations.

More than 40 HP-GL (Hewlett-Packard Graphics Language) instructions are built in, letting you program the plotter to perform a variety of complex operations, such as selecting pen velocity and defining your own characters. You can be writing in any direction, with or without slant, and in many sizes. Built-in symbol plotting and seven dashed-line fonts help you clearly express relationships.

Features

- High-quality graphics
- 800 points in a one-inch square (100 cm x 100 mm)
- Unrepeated up to 10 million (10KHz) per second
- Two built-in pens plus easy to add additional pens as needed
- Five internal character sets

Benefits

- Achieve more precise results
- Fine resolution of lines and curves
- Generate plots in minutes
- Plot with two or more colors
- Eliminate need for software-generated characters

Physical Specifications

DESKTOPS 71.7 cm (28 in)
43.3 cm (17 in)
24.3 cm (9.5 in)

WEIGHT 6.1 kg (13.5 lbs)

POWER REQUIREMENTS

-100V, +10%

50/60 Hz, 50W

HP-740, Opt.-002

HP-41, Opt.-003

OPERATING REQUIREMENTS

Operating Temperature 0° to 40°C (32° to 104°F)

Storage Temperature -40 to 70°C (-40 to 158°F)

PIOTTING AREA

X-axis 193 mm (7.5 in)
Y-axis 173 mm (6.7 in)
vertical setting 156 mm (6.1 in)
horizontal setting 156 mm (6.1 in)

MEDIA SIZES

80x11 in (A4/A3), 110x170 mm (B5/B4)

RESOLUTION

Standard addressedable

step size 0.02 mm (0.001 in)

REPEATABILITY

With a
green pen 0.1 mm (0.004 in)
From pen 0.2 mm (0.008 in)

PEN VELOCITY

Pen down programmable, 20.1 cm/sec
(15.4 in/sec)
programmable, 1 to 30
cm/sec (1 to 12 in/sec)
increments
Pen up 30.8 cm/sec (12 in/sec)

ACCELERATION

Approximately 5G

HP 82168A

Acoustic Coupler (Modem)

With the portable coupler, the HP-41 and HP-75 can talk to other computers over voice-quality telephone lines from remote locations. The 300 baud device meets the Bell 103 standard and can be used anywhere a conventional (G-type) telephone receiver is available.

The battery-powered device is compatible with HP-II, (by Hewlett-Packard Interface Loop). It can be turned on or off by a controller, or it automatically turns itself off after 10 minutes of inactivity. Mode changes are under software control, making communication easier.

The HP-41 Extended I/O Module, an HP-41 and HP 82168A Acoustic Coupler are all that are necessary for

Features

- Portable, carry-in box case.
- Operates at 300 baud.
- Automatic power off.
- HP-II-compatible controlled.

Series 40 operation of this battery-powered modem.

Data Communications Program software is the quickest and easiest way to operate the coupler with Series 70 computers. You also can use the combination of 103 Utilities Card (available in the HP-75 Utilities Solution Book, 08075-12012) and Asynchronous Terminal Emulator Program. The terminal emulator

Benefits

- Can be used from any conventional G-type phone receiver. Send or receive data wherever from the office.
- Compatible with most public and private data bases.
- Minimal power drain.
- Fully automatic operation.

program may be found in the HP 82168A Acoustic Coupler manual.

For additional data communications information, see the HP 82168A HP-II RS-232C Interface, page 17.

Physical Specifications

DEVIATIONS ±3.7 mV(±0.1 A) ±0.7 mV
(±0.1 mA) ±0.7 mV (±0.1 mA)

WEIGHT 600 g (22.0 oz)

POWER REQUIREMENTS

2.2 to 4.8 Volts
Charger
Input up to 120 Volts, 50 to 60 Hz, 1 amp
Output 8 Volts, 2 watts maximum
Power consumption 440 milliWatts

OPERATING REQUIREMENTS

Operating temperature 5° to 40°C (42° to 104°F)

Charging

temperature 15 to 40°C (59° to 104°F)
Storage temperature -40 to 60°C (-40° to 140°F)

TELEPHONE INTERFACE

Data transmission rate 300 baud
Input buffer capacity 40 bytes
Output buffer capacity 40 bytes
Compatibility Bell-type 103 series coupler

Transmit frequency 1030 1030, 1270 (originate mode)

Transmit frequencies

1030 1030, 1270, (originate mode)

Frequency stability control crystal (parallel)

Receive sensitivity -10 dBm (normal)

Transmit level +14 dBm (normal)

Modulation Frequency Shift Keyed (FSK)

Carrier detect delay 1.5 sec (average)

CONTROLLER PROTOCOLS

ENQ/ACK

ACN/RCV

NORM

Hewlett-Packard Instruments

HP 3468A Digital Multimeter*

HP's first HP-II (Hewlett-Packard Interface Language) instrument is a low-cost, autoranging digital multimeter for Series 3B and Series 40 portable and bench applications. It electronically calibrates itself, measures ac and dc voltages and currents and makes four-wire and two-wire resistance measurements.

The device has 2½ to 3½ digits, five functions, and a 1-µV sensitivity.

Features	Benefits
• 1½-digit precision.	Accurate measurements for high performance needs.
• 1-pA dc and ac resolution; 100 ohm maximum.	High sensitivity to detect small changes.
• GPIB interface.	Late-contamination measurement.
• 100,000 T's digits of resolution; up to 200 ms on OFF; speeds of 12 to 2.7 ps.	Selectable speed vs. accuracy for measurement flexibility.
• Electronic calibration and self-test.	Low system calibration, measure proper functioning.
• Optional battery pack.	Portability and isolation.

HP 3421A Data Acquisition/ Control Unit*

The Data Acquisition/Control Unit provides low-cost automated measurements and control for your portable and bench test needs. Scan and measure up to 30 differential channels or 20 single-ended channels of dc and ac voltage, resistance, temperature, and frequency, or read and write digital information and activate control signals. It stores up to 30 analog readings in an internal buffer for later use by the computer.

Features	Benefits
• Battery power.	Take it anywhere.
• Display shows character-based, digital status, and self-test conditions.	See what's happening at a glance.
• Electronic calibration and self-test.	High reliability and repeatable accuracy.
• Built-in 300,000-word A/D with 1-µV sensitivity and good noise rejection.	Measure transducers with confidence.
• Front terminals can be parallel with the computer's I/O control bus.	Measure dc voltage, ac voltage, current, frequency or thermocouple (noncontact) on the bench.
• Seven-fifteen HP-IB or HP-IB/HPIB interfaces.	Choose between low battery power and high computer performance.

Hewlett-Packard Interfaces

HP 82169A

HP-IB Interface

The HP 82169A expands Series 70 and Series 40 control and communication capabilities by linking low-cost HP-IL (Hewlett-Packard Interface Loop) systems with high-performance HP-IB (IEEE 488) computers and lab equipment. It puts at your disposal a variety of peripherals, instruments, and computers, including more than 120 HP-IB-compatible devices made by HP and many more offered by other manufacturers.

With the HP-IB/HP-IB interface, you can operate HP-IB versions of the HP 8290B printer and the HP 7470A and HP 8872B plotters, operate and control power supplies and instruments such as the HP 1890 oscilloscope, and talk directly with HP-IB computers such as HP Series 100, 200, 300, and 3000.

HP 82164A

RS-232C Interface

The HP 82164A is a fully asynchronous bi-synchronous interface that lets an HP-IL (Hewlett-Packard Interface Loop) controller, such as Series 70 or Series 40, talk to and work with computers, terminals, peripherals, and modems.

HP 82163 HP-II, 32-Column Video Interface

You can use this interface to display data and listings from HP-75 or HP-41/HP-IL systems on VHF-TV and TV monitor screens.

The display memory, consisting of 992 bytes, holds 31 lines of up to 32 characters. Sixteen lines may be viewed on the display at one time, and remaining lines are viewed by scrolling them onto the screen.

Characters can be displayed in inverse video (dark characters on light background).

HP 82163A: U.S.
HP 82163B: European

HP 82165A GPIO Interface

With this general purpose byte (8-bit) interface, an HP-81 or HP-73/HP-81 system can talk to and work with printers, special instrumentation, and other equipment with parallel bus structures. It contains port buffering and a built-in power supply.

HP 82938A Series 80 Interface

With the HP 82938A, a Series 80 computer connects a system controller or device in an HP-75 or HP-41/HP-IL (Hewlett-Packard Interface Loop) system. You can take advantage of Series 80 graphic capabilities to display information in easy-to-understand graphs and charts. Or, with Series 80 data communication products, you can pass information to larger computers.

HP 82166C

HP-II, Interface Kit*

This prototyping kit contains four sets of components and all the documentation needed to design HP-II (Hewlett-Packard Interface Loop) capabilities into microprocessor-based devices.

The kit includes:

- **HP-II Integrated Circuits.** These general purpose ICs provide a convenient interface between most standard microprocessors and HP-II...
- **HP-II Transformer Set.** This component provides electrical isolation of devices on the loop, as well as voltage level conversion and impedance matching.
- **HP-II Panel Receptacle.** It provides a foolproof mechanical method of connecting HP-II devices.

These components may be purchased individually when design is completed.

Hewlett-Packard

HP-75 Software

VisiCalcTM

00075-15014

You can perform spreadsheet analysis anywhere with HP-75 VisiCalc Application Pac software. Simply plug the 32K-byte ROM module into your HP-75 Portable Computer to organize lists, to file your data, to evaluate alternative courses of action, and to get your answers instantaneously.

Applications

Types of applications for the HP-75 VisiCalc include:

Finance. Analyze stock and bond portfolios; organize rental property records.

Business. Calculate break-even points and income; analyze cash flow, planned expenses, and projected financial tests; compute depreciation; keep travel expense and billing records.

Sales. Calculate sales vs. overhead and retail mark-up; forecast sales; keep an account register and travel expense record.

Statistics. Analyze tabular data gathered in the field.

Science/Engineering. Perform experimental data reduction and engineering design/analysis.¹²

HP-75 VisiCalc is a complete software solution with unique file and program capabilities.

With VisiCalc software plugged into an HP-75 you can store multiple worksheets in memory at the same time. One worksheet may call data from another worksheet and use this data in calculations.

VisiCalc formulas may call up BASIC programs. With this tool, you can create your own extension functions for specialized computation.

Features

- User-defined columns and row headers
- Multiple worksheets in memory
- Formula access other worksheets in memory
- Access to BASIC programs from worksheets
- Variable column widths
- Full-line editing of cell
- Alternate viewing window
- Exportable with HP-75 peripherals

Benefits

- Identify cell entry easily.
- Access worksheets quickly and easily.
- Simplify and shorten a long task by spreading easier several manageable worksheets.
- Display your own data lists.
- Control input formatting.
- Save time when changing long data entries or formulas.
- Perform "what if" analysis anywhere.
- Create a desktop system to print results, share notebooks, or view progress on a video display.

Using BASIC programs, you can redefine how HP-75 VisiCalc works. You can add new command capabilities such as sorting, searching, input screening, and much, much more.

HP-75 VisiCalc lets you identify rows and columns with any alphanumeric names instead of letter-number coordinates. And there's no need for full-screen viewing. For example, column C through the March and row 6 Taxes. On the HP-75's single-line display, which shows one cell at a time, you'd see cell F26 as [March] Taxes]. Column and row names also can be used in formulas. For example, total over taxes may be defined as \$1.00[January] Taxes] ... [December] Taxes].

Getting "what if" results is fast and easy with the Alternate Viewing Window. Simply change a value in the primary worksheet window, then move to the alternate window with a single keystroke to review results.

- The "GOTO" command gives you direct-access to any cell (intersection of each column and row) on the worksheet.
- You can review worksheet status (global and local formatting, current cell type, recalculations order and mode, etc.); view user-defined or default headers; view a cell's formula or results; and view full precision or integer/dollar display formats.

Upgradable memory 16K

VisiCalcTM is a registered trademark of VisiCorp.

¹²HP-75 VisiCalc application notes. Related applications discuss it can reduce the amount of time required for increasing efficiency, such as the fiscal year wage/13

Product Specifications

- 1 10K-Drive ROM
- 4 Preformed magnetic cards
- 1 Reference manual
- 1 User's manual
- Frequent user's reference manual
- Quick reference guide

PERIPHERAL SUPPORT

- HP 82902A HP-II, 9-Inch Video Monitor w/
HP 82903A HP-II, 11-Inch Video Monitor
- HP 82103 Video Interface
- HP 824000 Internal Drive
- HP 82101A Digital Cassette Drive

VISICALIC COMMANDS

ED—Delete	P—Print
SI—Format	R—Replicate
SC—Global	V—Video
SD—Details	W—Width
SI—Invert	——Repeating block
SM—Move	

All of the HP-170's numeric functions may be used in cell formulas, except LST, RCL, PCL, and VAL. In addition, the following Visicalic functions are provided:

AVERAGE—Computes arithmetic mean or average of numeric parameters in the list.

ERRVAL—Results in an "Error" value that makes all expressions using the value display ERRVAL in the cell display.

MAX(list)—Computes the maximum value in the list.

MIN(list)—Computes arithmetic mean of values in the list.

MIN(list)—Computes the minimum value in the list.

N/A—Results in "Not Available" value that makes all expressions using the value display N/A.

SUM(list)—Computes the sum of the values in the list.

Text Formatter

00075-15019

With portable Text Formatter software and an HP-75, you have word processing power at your fingertips anytime, anywhere. Simply plug the 8K-byte Application Pak module into the computer to create menus, letters, reports, and other short documents quickly and easily.

Applications

Applications for Text Formatter include:

On the plane. Prepare rough drafts and finished reports.

At the hotel. Review and edit notes for next-day presentations; write travel reports.

At the client's office. Prepare last-minute documents while waiting; take notes in conference.

At your office. Write memos and business reports.

At home. Catch up on correspondence.

Text Formatter is the perfect complement to the HP-75's built-in text editing capability. The text editor lets you input and modify text you've already typed, search for words, insert or delete characters, words, or blocks of text. Text Formatter lets you control the appearance of the text (define paragraphs, set headings, number pages, and justify text).

You can store up to ten pages of text in the HP-75 with an HP 82700A 8K Byte Memory Module.

Text Formatter's command set is easy to learn, use, and remember. Five commands define the document's structure:

- set margins,
- set number of lines per page,

Features

- Simple command set
- Compact, portable
- Filing system
- Review and cancel input
- Distribution list command
- Merge file command
- Help file
- Page listing
- Custom memory

- set line spacing
- turn page numbering on and off
- set justification

- Additional commands let you
- define new paragraphs
- advance to the next page
- skip lines
- set tabs

Commands consist of two-character abbreviations preceded by a colon (:) that you can set once at the start of the document or change at any time throughout the text. You enter the commands as you create the text file.

There are four ways to process your text:

- Center Mode centers text between specified margins
- Copy Mode lets you output text exactly as it was entered, including all spaces. Each line begins printing at the left margin.
- Fill Mode lets you enter text without worrying about margins or spacing between words. Extraneous spaces are narrowed and words are printed

Benefits

Learn and remember commands easily. Take it anywhere.

Keep a consistent overall format for documents.

Never lose its settings.

Keep up-to-date lists. Create copy automatically. Personalize documents.

Add standard paragraphs wherever you need them.

Quick, convenient command set reference. Specify conditional page advances if looks like no enough copy.

Loses, rewrites, and edits user-defined commands quickly and easily.

up to the right margin. If a word is too long to fit on the current line, it will begin on the next line or page.

- Justify works similarly to fill mode, except that each line is justified for both left and right margins. If a word is too long to fit on the current line, additional spaces are added between words on that line so that text is aligned with left and right margins.

You also get these convenient features:

- Distribution List Command. Personalize your letters and save time with this command. It automatically creates an individual copy for each person on your list.
- Merge File Command. Insert those often used paragraphs and letterheads whenever you need them.
- Slide Command. Create quality professional transparencies for presentations and reports with the HP 8270A Graphics Plotter.
- Help Facility. Press a single key to list all commands and their functions.

- Custom Overlay. Makes user-defined keys easy to learn, remember, and enter.

Product Specifications

16K-byte ROM
2 Recommended memory cards
1 Keyboard overlay
Owner's manual
Quick reference guide

PERIPHERAL SUPPORT

HP LaserJet printer
HP 7470A Graphics Plotter
HP 8110A Digital Cassette Drive

CAPACITY

Approximately six pages with the HP71
Portable Computer
Approximately 10 pages with an additional
HP 8170A 8K Byte Memory Module.

COMMAND SUMMARY

AD—Address page
CD—Create mode
CO—Copy mode
DL—Distribution list

FI—File mode
LI—Listify mode

MA—Merge
ME—Merge
PA—Paragraph
PL—Page layout
PM—Automatic page numbering
SC—Stop code
SI—Mode
SO—Spacing
TA—Tab

Math Pac 00075-13015

The Math Pac is a powerful analytical tool for solving a wide range of mathematical problems. Its function set consists of a group of easy-to-learn BASIC commands that range from simple numeric and string functions to a sophisticated polynomial root-finder. With the 16K-byte module plugged into the HP-75, these commands are instantly available for user programs or for direct execution in the computer's calculator mode.

Applications

The Math Pac's comprehensive function set is useful for engineers, scientists, and mathematicians in many applications.

Radio Engineers. Use hyperbolic trigonometry to solve transmission line problems.

Mechanical and Structural Engineers. Use the definite integrals function to solve stress distribution problems.

- Math Pac's function set includes:
 - Real scalar functions
 - Logarithm, round, truncate, factorial, and Gamma functions.
 - Hyperbolic and inverse hyperbolic sine, cosine, and tangent.
 - Base conversions
 - Binary/hexadecimal/octal to decimal conversion.

Features

- Decod. direct function set.
- Powerful, sophisticated algorithm.
- BASIC command set.
- All functions and operations written in the HP-75's assembly language.
- Extends range of HP-75's built-in math capabilities.

Benefits

- Solve most kinds of math problems, simple and complex.
 - Solve problem quickly and efficiently.
 - Program with ease and versatility.
 - Enjoy precision, accuracy, and speed.
- Let you select integer or decimal precision or full floating decimal to display results.

—Decimal to binary/hexadecimal/octal conversion.

—Convenient input and output of arrays.

—Explicit and implicit array subdimensioning.

—Extensive real and complex matrix operations.

—Inversion, system solution, determinant, transpose, and array arithmetic.

—Can handle arrays of arbitrary size.

—Complete set of complex functions.

—Sophisticated polynomial root-finder.

—Locates all roots (real and complex) of a polynomial with real coefficients.

—Can solve up to degree 560 (with the 8K memory expansion module).

16K can solve up to degree 380.

—Solution to $f(x) = 0$.

—Solves a user-defined function for a real root.

—Definite integrals.

—Evaluates definite integrals of user-defined functions.

—Can compute improper integrals.

—Finite Fourier Transform.

—Computes the complex to complex finite Fourier Transform.

—Sophisticated algorithm achieves high speed.

—May be used to compute inverse transforms.

—May be used to compute Fourier sine/cosine series coefficients.

Product Specifications

- 160-line LCD
- Owner's Manual
- Quick Reference Guide

FUNCTION SET OVERVIEW

- Complete set of numeric and base-conversion functions.
- Explicit and implicit array subdimensioning.
- Extensive real and complex matrix operators.

Convenient input and output of arrays.

Complete set of complex functions.

Sophisticated polynomial root-finder.

Solution to $f(x) = 0$.

Definite integrals.

Fast Fourier Transforms.

STATEMENTS AND FUNCTIONS

MATLAB—Sum of absolute values of elements in array.

ACOSH—Inverse hyperbolic cosine.

AMIN—Index of lowest element in array.

AMIN1—Index of smallest element in array.

ASINH—Inverse hyperbolic sine.

ASINH1—Inverse hyperbolic tangent.

BTFB—Universal Binary Transformation (Octal conversion).

BALI—Natural logarithmic Octal to decimal conversion.

CNORM—Largest sum of absolute values of elements in each column of array (column norm).

COSH—Hyperbolic cosine.

DDET—Determinant of matrix.

DET—Determinant of last matrix entered in MATLAB statement as specified in first argument in **MAT STS** statement.

DET1—Sum of products of corresponding elimination factors (det produced on scalar product).

FACT—Factorial Gamma function.

FLOOR—Square root of sum of squares of elements in array (Pellentula's sum or Euclidean norm).

FNUOC—Frobenius norm of user-defined function.

INTCML—Evaluates definite integrals of any defined functions.

LBNLD—Lower bound of array subscripts.

LBNR—Base Y log of X.

LBNR2—Base Z log of X.

MAT—Assigns value of numeric expression or values of all elements of specified array to elements of result array.

MAT (+ , - , *)—Performs specified arithmetic operations between two arrays.

MAT (* , scalar)—Multiplies an array by a scalar.

MAT CACTOS—Complex inverse cosine.

MAT CACOSH—Complex inverse hyperbolic cosine.

MAT CALD—Complex number addition.

MAT CALS—Complex inverse sine.

MAT CASHF—Complex inverse hyperbolic sine.

MAT CALANTH—Complex inverse hyperbolic tangent.

MAT CBTN—Complex inverse tangent.

MAT CCNTL—Complex cosine.

MAT CCOSH—Complex hyperbolic cosine.

MAT CCOT—Derivatives of complex numbers.

MAT CDIV—Complex number division.

MAT CEPS—Complex exponential.

MAT CEXP—Complex identity matrix.

MAT CINV—Inverse of a complex matrix.

MAT CLGS—Complex logarithm.

MAT CMUL—Multiplication of complex arrays.

MAT CMUL—Complex number multiplication.

MAT CCON—Assigns value 1 to all elements of array.

MAT CCOP—Conjugate of a complex number.

MAT CPINV—Complex inversion.

MAT CPINV—Polar to rectangular conversion.

MAT CRCP—Reciprocal of a complex number.

MAT CRCS—All N complex Nth roots of a complex number (real N implicitly understood to be 12).

MAT CRDP—Finds cross products vector product of two element vectors.

MAT CSCH—Reciprocals in polar conversion.

MAT CSIN—Complex sine.

MAT CSINH—Complex hyperbolic sine.

MAT CSCS—Complex square root.

MAT CSA—Complex matrix subtraction.

MAT CSA—Assigns values of elements in each column of array.

MAT CSY—Solution of a system of complex linear equations.

MAT CTAN—Complex tangent.

MAT CTANH—Complex hyperbolic tangent.

MAT CTBN—Complex cotangent.

MAT DFR—Displays elements of arrays.

MAT DSP USING—Displays elements of arrays according to format string specified in **Disp** statement or in **BLACP** statement whose statement number is specified.

MAT FIDR—Completes Fast Fourier Transforms.

MAT IDIV—Assigns value 1 to all diagonal elements of matrix, and value 0 to all others.

MAT INPUT—Assigns values input directly from command of arrays.

MAT INV—Finds inverse of matrix.

MAT LUFACT—Performs LU factorization of a matrix.

MAT PRINT—Prints elements of arrays.

MAT PRINT UNDEC—Prints elements of arrays according to format string specified in **Disp** statement or in **BLACP** statement whose statement number is specified.

MAT PREDCT—Finds all roots real & complex of a polynomial with real coefficients.

MAT REFL—Assigns values listed in **Data** statement to elements of arrays.

MAT RESAL—Sets values of elements in each row of array.

MAT STS—Solves matrix equation $A = B$ for unknown array X , given any square matrix A and one other array B .

MAT TBN—Finds transpose of array.

MAT ZER—Assigns value 0 to all elements of array.

MAT ABS—Largest absolute value of any element in array.

MAT ABSL—Smallest absolute value of any elements in an array.

MAT RM—Changes rounding size of arrays to size specified.

MAT NRM—Largest sum of absolute values of elements in each row of array.

MAT IND—Keeps 1 at 10th digit.

MAT I—Hyperbolic sine.

SUM—Sum of elements in array.

TANH—Hyperbolic tangent.

TRINV AT—Transcute Y at 10th digit.

UNVAT—Upper bound of array subscript.

Surveying Pac®

00075-15012

This handy Application Pac software gives you one integrated program that simply and easily handles your routine surveying calculations.

Plugged into the HP-75 Portable Computer, it permits convenient data entry in the field followed by quick, easy calculation in the field or back at the office.

Applications

The Surveying Pac is a portable solution that lets land surveyors and engineers handle calculations involved in:

- Traversing
- Intersections
- Coordinate geometry
- Curve layout
- Radial staking

The Surveying Pac has a unique system that lets you enter data in a variety of ways, by using bearings, north and south azimuths, angles left or right, and horizontal deflections left or right. You can choose any of these input modes independently of the output mode desired.

Its friendly, menu-driven system eliminates the need to memorize cumbersome commands or to use keyboard overlays. Descriptive prompts guide you through each

Features

- Provides one integrated program rather than a collection of individual routines.
- Anticipates desired results and generates necessary inputs.
- Flexible data entry options.
- Surveying routine can access stored data files or prompt you to create a new file.
- Can transfer from one location to another including user-written programs.
- Memorable prompting.
- Circular input for validity checks and displays warning for invalid data.
- HP-75 built-in card reader.
- HP-41 peripherals available.

Benefits

Solves a wide range of surveying problems.

Get answers quickly, easily.

You don't have to change field procedures to use the system.

Enter data in the field and calculate results. Or store data for analysis back at the office. Edit the system to your needs with your own programs.

Nothing else offers demonstrations in the field.

Save time. Automatic error checking occurs as data is entered and prevents re-entering or re-coding of files.

Enjoy convenient, portable, inexpensive mass storage modules.

Find no-store results in the field with HP-80 portable peripherals.

function. And if a mistake is made, the system displays an error message and allows plenty of the data.

You'll also appreciate these features:

- The HP-75 is a BASIC language machine, so subprograms can be easily modified for custom applications.
- The HP-75 can maintain an X-Y-Z (northing, easting, elevation) data

file. All coordinates are stored immediately and can be recalled at any time. Points also may be transferred to Series 80 Personal Computers via HP-IL (Hewlett-Packard Interface Link).

• Output is tailored to your specifications. You choose the units, number of decimal places to print, bearings vs. full-circle azimuths, etc.

Product Specifications:

1 Multifunction Printer
Owner's Manual

PERIPHERAL SUPPORT

HP Q2690A Impact Printer
HP Q5912A Thermal Printer/Plotter
HP Q5916A Digital Cassette Drive
HP Q5919A Video Interface
HP Q5920A 8-Port Video Monitor or
HP Q5921A 12-Inch Video Monitor

CAPACITY

Approximately 600 data points can be stored
with the HP-79 Portable Computer.
Approximately 1000 data points can be
stored with the add-onboard HP 82700A
8M Byte Memory Module.

COMMAND SUMMARY

Point Manipulation
Delete All Points Erase
List Trim Point
Clear Scale
Display
Field Control
Enter & Reduce Field Norms
Slope Reduction
Site Photo
Compute Area of Closure
Angle Balance
Benditch or Compute Rate Balance
Crandall's Rule Balance
Radial Scale Out

Coordinate Geometry

Inverse
Inverse
Roving Bezier Intersections
Roving Distance Intersections
Distance Bezier Intersections
Distance-Distance Intersections
Inscribed Curve with Straight Tangents
Inscribed Curve with Curved Tangents
Inscribed Curve with Straight in Curved
Tangents
Curve Inverse
Solve for a Curve Given Arc Length
Solve for a Curve Given Chord Length
Solve for a Curve Given Central Angle
Solve for a Curve Given Tangent Length
Compute Area (including curved sides)

Data Communications Pac[®] 00075-15035

With the Data Communications Pac, an HP-73 and a modem, you have easy access to other computer systems or to commercial time-sharing systems such as THE SOURCE[™], Dow Jones News/Retrieval Service[®], and CompuServe.[®]

You can obtain stock quotes, send or receive mail electronically, and access complete libraries of information anywhere, anytime.

Applications

Applications for Data Communication include:

Finance. At your office, retrieve up-to-the-minute stock and bond quotes for immediate analysis and action.

Business. At your hotel, send or receive letters from your electronic mail box, even make airline reservations.

Sales. At your client's office, transmit documents and other information to and from your main office's host computer.

Science. In the field, send gathered data to your lab computer for processing.

Data Communications is a versatile package providing terminal emulation capability for the HP-73C. Set-up files allow the HP-73 and a modem to be configured for communication with a variety of host computers.

Features

- Connect to document systems such as TELMATE[™], Dow Jones News/Retrieval Service[®], or a computer.
- Transfer text files.
- Use optional HP 82168A Acoustic Coupler, any RS-232C-compatible modem, or direct connection to a system.
- Multiple display devices.
- Host-driven command set.
- Set-up files.
- Special code words.
- Set-up options.
- 200-character buffer.

Benefits

Access the latest information anywhere, anytime.

Send previously written text files or receive information from text files.

Configure a system that meets your application needs.

View information on the HP-73's display panel, or video monitor.

Perform commands with a single keypress. Flexible system configuration.

Define commonly used log-on procedures, recall by code word later in the program.

Add, change, delete or list code words in set-up files.

Review information received when using the HP-73's display.

Special code words are used to provide flexible system configuration and to allow common log-on procedures to be stored and recalled from the program.

An editor is available to add, delete, change, or list code words in set-up files.

Other features include:

- Incoming and outgoing data may be sent to the HP-73's liquid-crystal display, a printer, and/or a video interface.
- Stores incoming information in a 200-character buffer for later review.

Text files written offline can be transferred to a host computer.

Incoming information may be saved in the HP-73's text file for later viewing, editing, or printing.

• Use the HP 82168A Acoustic Coupler (modem) or any RS-232C-compatible modem. Or connect directly to a host computer.

Product Specifications

- 1 32-Kbyte ROM
- 1 Prerecorded magnetic media
- Owner's Manual
- Quick Reference Guide

PERIPHERAL SUPPORT

- HP 92100A Acoustic Coupler
- HP 92112A HP 9100-200 Interface
- HP 920900 Impact Printer
- HP 92121A Thermal Printer/Phone
- HP 92131A Video Interface
- HP 920912A 9-inch Video Monitor or
- HP 920913A 12-inch Video Monitor

CARTRIDGE

Approximately one page of information is stored in a buffer when using the LCD as

the display device for the HP 79 Portable Computer.

Approximately six pages of text can be transferred between the HP 79 and a host computer system.

Additional four pages of text can be transferred using the HP 920900 8K Text Memory Module.

COMMAND SUMMARY

- F—Help.
- C—Change set-up file.
- D—Disk.
- E—Setup file editor.
- H—Hang up the phone.
- L—Toggle LCD ON/OFF.
- M—Toggle printer ON/OFF.
- Q—Leave DataCartridge program.
- S—Send special code word.

T—Terminal mode.

B—Toggle video ON/OFF.

R—Transfer text file.

Editor commands

- A—Add code word.
- C—Change code word.
- D—Delete code word.
- L—List set-up file.
- O—Leave editor.

T—Help.

LCD control modes

- [S]—Toggle between scroll and line display mode.
- [P/T]—Toggle between terminal and buffer mode.

Hewlett-Packard HP-75 Solutions Books

Easy-to-use Series 70 Solutions Books come complete with preprogrammed magnetic cards and documentation. These ready-written programs are also available on cassette from the Users' Library (see page 29).

Math I 080075-130020

- Fast Fourier Transform
- Fast Fourier Series/Trigonometric Interpolation
- Alternating Fourier Series
- Spherical Harmonics
- Elliptic Integrals
- Bessel Functions: Asymptotic Expansion
- Bessel Functions: Backward Recurrence
- Gamma Functions
- Error Function
- Legendre Polynomials

Math II 080075-130040

- Simultaneous Linear Equations
- Quadratic Equations
- Parabolic Equations
- Roots of Polynomials
- Triangle Solutions
- Polygon Area
- Hyperbolic Functions
- Complex Trigonometric Functions
- Prime Factorization

Math III 080075-130060

- Mid-point Rule for Integration
- Trapezoidal Rule for Integration
- Romberg Rule for Integration
- Simpson's Rule for Integration
- Newton-Cotes Rule for Integration
- Euler's Method
- Newton's Method
- Trapezoidal Rule for Ordinary Differential Equations
- Runge-Kutta
- Contraction Mapping

Finance 080075-130090

- Break-even Analysis
- Growth
- Bond Price and Yield
- Depreciation Calculator
- Lease vs. Purchase
- Present Value of a Geometric Series
- Present Value of an Arithmetic Gradient Series

Games I 080075-130094

- Adventure
- Blackjack
- Rocket Lander

Games II 080075-130097

- Football
- Hanabi
- Slot Machine

Real Estate 080075-130101

- Income Property Analysis
- Estimate of Buyer's Cost
- Seller's Costs and Net Equity
- Internal Rate of Return
- Rent vs. Buy
- Variable Payment Mortgage
- Amortization Tables
- Variable Interest Rate Mortgage
- Loan Schedule

PC Utilities 080075-130109*

- HP-IL Emulator

Electronics 080075-130098

- Common Components for 523 & 567 ICs
- Ohm's Law with dBm Conversion
- Smith Chart Conversion
- MisMatch
- dB to % to dBr Conversion
- Butterworth Filter Design
- Active Filter Design
- Low Pass Filter Design
- Coil Design

Test Statistics 080075-130129

- One-Sample Test Statistic for the Mean
- Kendall's Coefficient of Concordance
- Correlation Coefficient Test
- Intraclass Correlation Coefficient
- Kurskal-Wallis Statistic
- Mann-Whitney U-test
- Fisher's Exact Probability
- Two-Factor Analysis of Variance
- Bartlett's Chi-Square Statistic
- Difference Among Proportions
- Data Transformations

Graphics 080075-130161

- Line Plot
- Bar Chart Plot
- Pie Chart Plot

Mass Media Duplication/Privacy 080075-130194

Statistics 080075-130111

- Basic One Variable Statistics
- Coefficient of Correlation
- Probability of Normal, F, t, & Chi-Square Distributions
- Dependent (Paired) t-Test
- t-Test for 2 Unequal Sized Samples
- Chi-Square Test
- One-Way Analysis of Variance
- Simple Linear Regression
- Permutations & Combinations

Hewlett-Packard Software Development Tools

By itself, the HP-75 has a built-in BASIC interpreter and a comprehensive set of editing functions that smooth and speed the development of BASIC language software. The HP 8271A Plug-in Module Simulator (PMS) is added to develop and field test BASIC language custom software and to reproduce it in plug-in modules. The PMS-based medium consists of a device that simulates a plug-in ROM module, as well as a set of Series 70 BASIC commands on magnetic cards. BASIC language programs written on the HP-75 can be loaded into the PMS and run as if they were plug-in modules. When you're satisfied the custom program is viable, HP will reproduce it in as many custom modules as needed.

PMS has a built-in lithium battery that lets it retain its contents when unplugged.



Series 70 Custom Products

To solve your routine programming and data handling problems, you'll want to consider Series 70 Custom Product applications. Keys on the HP-75 are user-definable. Custom Keyboard Overlays make data entry quicker and easier. Up to three custom software modules can be plugged easily into the HP-75, providing as much as 96K bytes of custom ROM software. You can choose from a variety of inexpensive media for your special applications. For more information, contact your HP sales representative.

Users' Library Software

More than 100 programs in math, business, statistics, and engineering are included in the Users' Library "Catalog of Contributed Programs" for Series 70. And the Users' Library welcomes more. The catalog contains information on how to buy and submit programs and on how to become a Library member. Program documentation includes individual program listings, and it's available with or without magnetic cards. You also can purchase programs on mini-cassettes for the HP11 Digital Cassette Drive.

